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PROCUREMENT SECTION  
CURRENT SERIAL RECORDS

# ***WATER SUPPLY OUTLOOK FOR MONTANA***

Prepared by  
**U. S. DEPARTMENT of AGRICULTURE ★ SOIL CONSERVATION SERVICE**  
Collaborating with  
**MONTANA AGRICULTURAL EXPERIMENT STATION**

Data included in this report were obtained by the agencies named above in cooperation with Federal, State, and private organizations listed on the inside back cover of this report.

AS OF  
**JAN. 1, 1972**



## TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbia Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters of key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

COVER PHOTO NUMBER ORC 221-3

## PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, Western Regional Technical Service Center, Room 209, 701 N. W. Glisan, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	P. O. Box "F", Palmer, Alaska 99645
Arizona	6029 Federal Building, Phoenix, Arizona 85025
Colorado (N. Mex.)	P. O. Box 17107, Denver, Colorado 80217
Idaho	Room 345, 304 N. 8th. St., Boise, Idaho 83702
Montana	P. O. Box 970, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno Nevada 89505
Oregon	1218 S. W. Washington St., Portland, Oregon 97205
Utah	4012 Federal Bldg., 125 South State St., Salt Lake City, Utah 84111
Washington	360 U.S. Court House, Spokane, Washington 99201
Wyoming	P. O. Box 2440, Casper, Wyoming 82601

## PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Water Supply Forecast and Snow Surveys Unit, California Department of Water Resources, P. O. Box 388, Sacramento, California 95802 --- and for British Columbia by the Department of Lands, Forests and Water Resources, Water Resources Service, Parliament Building, Victoria, British Columbia



# ***WATER SUPPLY OUTLOOK FOR MONTANA***

and  
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

*Issued by*

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MONTANA WATER SUPPLY OUTLOOK  
January 1, 1972

\* \* \* \* \*  
\*  
\* The mountain snowpack is above average in \*  
\* all drainages. Some snow courses in the \*  
\* Bitterroot, Madison and upper Yellowstone \*  
\* have near record amounts of water stored \*  
\* in the snowpack. \*  
\*  
\* \* \* \* \*

COLUMBIA RIVER DRAINAGE

Snow - Snowpack in the Flathead drainage is a little more than last year and about 150 percent average. The upper Clark Fork is 140 percent of last year and about 170 percent average. The Bitterroot drainage has a snowpack similar to last year and is about 125 percent average. The lower Clark Fork is similar to last year and about 140 percent average. Snow depth measurements in the Kootenai River drainage are scheduled for February.

Soil moisture is generally near or below average in most drainages, with the exception of the Bitterroot, Blackfoot and lower Clark Fork where mountain soils are drier than average.

Streamflow - Forecasts of individual streams will be made on March 1. However, present moisture conditions indicate streamflow during the spring and summer months should be 10 to 25 percent above average in many drainages.



## MISSOURI RIVER DRAINAGE

Snow - The mountain snowpack is well above average in several drainages. The snowpack is near record in many areas of the Beaverhead and Madison drainages and in mountains of Central Montana. Snowpack in the Jefferson and Madison River drainages is similar to a year ago and about 160 percent average. The Gallatin River snowpack is less than last year and about 70 percent of the record amounts measured last year, and about 120 percent average. Snowpack over the Missouri headwaters above Canyon Ferry is about 10 percent less than last year and about 145 percent average. Tributaries to the Missouri Main Stem have about 140 to 160 percent average snowpack.

Mountain soil moisture is generally near average with the exception of the southwestern portion of the state which is above average.

Streamflow - Forecasts of streamflow will be issued on March 1. With the present snowpack at least an average runoff can be anticipated next spring, even though below average precipitation is recorded throughout June. Runoff should be in the 120 to 150 percent average range on most streams.

## YELLOWSTONE RIVER DRAINAGE

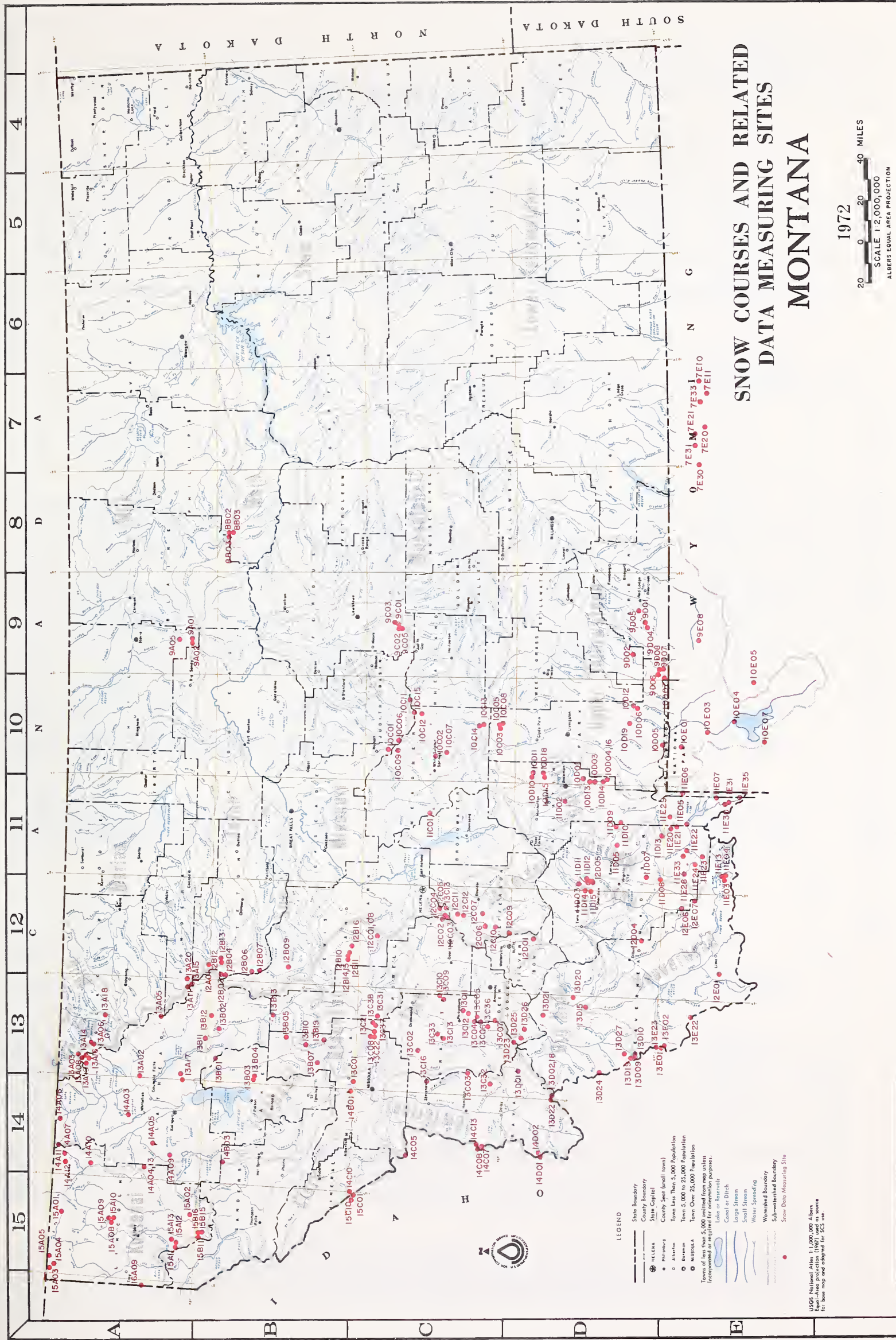
Snow - Snowpack in the Yellowstone drainage above Billings is well above average, and near record in some areas. Over the headwaters area the snowpack is about 5 percent less than a year ago and about 145 percent average.

Soil moisture is generally above average in headwater areas and near average elsewhere.

Streamflow - With present conditions, streamflow can be expected to be well above average and likely near the high volume flows produced last year.







# SNOW COURSES AND RELATED DATA MEASURING SITES MONTANA

1972  
20 0 20 40 MILES  
SCALE 1:2,000,000  
ALBERS EQUAL AREA PROJECTION

## LEGEND

- State Boundary
- County Boundary
- County Seat (small town)
- State Capital
- City
- Town Less Than 5,000 Population
- Town 5,000 to 25,000 Population
- Town Over 25,000 Population
- Towns of less than 5,000 omitted from map unless incorporated or required for orientation purposes.
- Lake or Reservoir
- Canal or Ditch
- Large Stream
- Small Stream
- Water Spreading
- Waterland Boundary
- Sub-watershed Boundary
- Snow Data Measuring Site

USGS National Atlas 1:1,000,000 Albers  
Equal Area Projection  
For base map and adapted for NCEC use



INDEX to MONTANA SNOW COURSES and SOIL MOISTURE STATIONS

Drainage Basin & Snow Course	Number	Elev.	Sec.	Twp.	Range	Record Began	Measuring Dates 1/	Mens. By 2/	Grainage Basin & Snow Course	Number	Elev.	Sec.	Twp.	Range	Record Began	Measuring Dates 1/	Mens. By 2/

SNOW COURSES

COLUMBIA RIVER BASIN

KOOTENAI RIVER	15111	5700	6	27N	31W	1969	3,4,5,5,6	1	RUBY RIVER	11016	8850	5	4S	34	1967	3,4,5	1,12	UPPER YELLOWSTONE RIVER	
	15112	5600	4	32N	30W	1969	2,3,4,5,5,6	1		Grainage Basin	11008	8800	28	24	1963	3,4,5	1		
	15113	5500	36	26N	31W	1956	3,4,5,5,6	2		6 Snow Course	12007	7900	14	12S	44	1963	3,4,5		1
	15114	5500	36	26N	31W	1956	3,4,5,5,6	2			11015	7850	17	48	34	1967	3,4,5		1,12
	15115	4600	31	26N	30W	1966	3,4,5,5,6	2			12006	8500	16	48	34	1967	3,4,5		1,12
	15116	3600	5	25N	30W	1965	3,4,5,5,6	2			12005	8500	24	4S	34	1967	3,4,5		1,12
	15117	3900	2	32N	30W	1969	3,4,5,5,6	1,2											
	15118	3900	2	32N	30W	1969	3,4,5,5,6	1,2											
	15119	5000	12	30N	26W	1937	3,4,5	1,2											
	15120	5000	12	30N	26W	1969	3,4,5,5,6	1											
KOOTENAI RIVER	15121	5000	12	30N	26W	1969	3,4,5,5,6	1,2	BIG HOLE RIVER	13020	8800	7	3S	11W	1963	3,4,5	1	UPPER YELLOWSTONE RIVER	
	15122	5000	12	30N	26W	1969	3,4,5,5,6	1,2		Abundance Lake	13026	6650	34	2N	16W	1969	3,4,5		1
	15123	5000	20	37N	33W	1969	2,3,4,5,5,6	1		Darby Creek	13019	8600	4	8S	16W	1963	3,4,5		1
	15124	4250	16	37N	37W	1969	13A05	1		Garver Lake	13021	8780	11	3S	13W	1963	3,4,5		1
	15125	4300	1	36N	25W	1937	3,4,5,5,6	1		Foothill	13021	8780	11	3S	13W	1963	3,4,5		1
	15126	4450	18	37N	33W	1969	2,3,4,5,5,6	1		Graves Creek	13022	8780	11	3S	13W	1963	3,4,5		1
	15127	4450	18	37N	33W	1969	2,3,4,5,5,6	1		Hawkins Lake	13025	7850	24	2N	15W	1969	3,4,5		1
	15128	4450	18	37N	33W	1969	2,3,4,5,5,6	1		Middle Lake	13025	7850	24	2N	15W	1969	3,4,5		1
	15129	4800	31	33N	29W	1969	2,3,4,5,5,6	1		Pelade Creek	13023	8250	3	2N	15W	1967	4,5		1
	15130	5100	5	23N	31W	1969	2,3,4,5,5,6	1		Sage-Hall Lake	13024	8750	29	5S	17W	1968	3,4,5		1
KOOTENAI RIVER	15131	5100	5	23N	31W	1969	2,3,4,5,5,6	1	BIG HOLE RIVER	13024	8750	29	5S	17W	1968	3,4,5	1	UPPER YELLOWSTONE RIVER	
	15132	5100	5	23N	31W	1969	2,3,4,5,5,6	1		Abundance Lake	13026	6650	34	2N	16W	1969	3,4,5		1
	15133	5100	5	23N	31W	1969	2,3,4,5,5,6	1		Darby Creek	13019	8600	4	8S	16W	1963	3,4,5		1
	15134	5100	5	23N	31W	1969	2,3,4,5,5,6	1		Foothill	13021	8780	11	3S	13W	1963	3,4,5		1
	15135	5100	5	23N	31W	1969	2,3,4,5,5,6	1		Graves Creek	13022	8780	11	3S	13W	1963	3,4,5		1
	15136	5100	5	23N	31W	1969	2,3,4,5,5,6	1		Hawkins Lake	13025	7850	24	2N	15W	1969	3,4,5		1
	15137	5100	5	23N	31W	1969	2,3,4,5,5,6	1		Middle Lake	13025	7850	24	2N	15W	1969	3,4,5		1
	15138	5100	5	23N	31W	1969	2,3,4,5,5,6	1		Pelade Creek	13023	8250	3	2N	15W	1967	4,5		1
	15139	5100	5	23N	31W	1969	2,3,4,5,5,6	1		Sage-Hall Lake	13024	8750	29	5S	17W	1968	3,4,5		1
	15140	5100	5	23N	31W	1969	2,3,4,5,5,6	1		White Hall	13024	8750	29	5S	17W	1968	3,4,5		1

**SNOW**

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Elevation				Last Year	Average

COLUMBIA RIVER BASIN
FLATHEAD RIVER

Desert Mountain	5600	12/29	34	10.5	9.5	6.5
Hell Roaring Divide	5770	1/03	68	21.1	17.0	13.2
Holbrook	4530				6.5A	3.4
Marias Pass	5250	12/29	41	10.5	9.4	7.4
Spotted Bear Mountain	7000				9.0A	6.5
Twin Creeks	3580				7.5A	5.0

CLARK FORK RIVER

Black Pine	7100	12/30	30	6.9	4.6	3.9
Black Pine Pillow	7100	12/30	SP	8.1	6.2	5.1
Combination	5600	1/03	24	4.4	1.9	-
Coyote Hill	4200	1/05	42	9.2	5.4	4.3
Heart Lake Trail	4800	1/04	54	15.2	11.4	-
Hoodoo Basin	6000	1/04	95	28.5	25.2	19.8
Hoodoo Basin Pillow	6000				23.5E	19.1
Hoodoo Creek	5900	1/04	92	27.5	23.4	18.0
Lookout	5250	12/29	78	19.4	21.8	15.7
Lubrecht Flume	4800				2.4	-
Lubrecht Forest No. 3	5450	12/30	21	4.6	2.7	2.6
Lubrecht Forest No. 4	4650	12/30	14	2.6	1.6	1.4
Lubrecht Forest No. 6	4040	12/30	18	3.6	1.8	1.6
Lubrecht Hydroplot	4200				2.0	-
North Fork Elk Creek	6250				5.8	-
Peterson Meadows	7200	12/28	27	5.4	5.3	-
Peterson Meadows Pillow	7200	12/28	SP	5.6	6.2	-
Storm Lake	7780	12/28	29	5.7	7.6	5.5
TV Mountain	6800				10.9	6.6

BITTERROOT RIVER

Gibbons Pass	7100	12/29	46	12.0	12.9	9.6
Lolo Pass	5230	12/28	64	16.7	16.0	13.4
Lost Horse	5940	12/27	60	16.0	13.6	11.8
Moose Creek	6200	1/02	44	9.8	8.0	-
Saddle Mountain	7940	12/29	49	12.8	14.4	12.4
Saddle Mountain Pillow	7940	12/29	SP	12.5	16.5	-
Savage Pass	6600	12/27	49	12.4	12.7	-
Twelvemile Creek	5600	12/27	48	12.2	9.4	-
Twelvemile Creek Pillow	5600	12/27	SP	9.0	8.4	-
Twin Lakes	6510	12/27	74	20.7	17.8	15.7
Twin Lakes Pillow	6400	12/27	SP	19.5	18.5	-

A - Aerial observation - water content estimated.

SP - Snow pillow observation - water content only.

E - Estimated data.





# SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Elevation				Last Year	Average

## MISSOURI RIVER BASIN

### BEAVERHEAD RIVER

Camp Creek	6800	12/28	34	8.0	9.7	3.5
Kilgore	6200	12/30	36	7.5	9.6	3.5
Lakeview Canyon	6930	12/30	42	10.3	10.8	4.6
Lakeview Ridge	7400	12/30	36	8.7	9.6	4.2
Sawtelle Mountain	8715	12/28	74	20.7	-	-

### JEFFERSON RIVER

Pipestone Pass	7200	12/29	20	4.6	2.3	2.2
Rocker Peak	8000	12/29	31	7.4	-	-
Rocker Peak Pillow	8000	12/29	SP	6.9	8.1	-
Uncle Sam Gulch	6500	12/29	19	3.7	-	-

### MADISON RIVER

Big Springs	6500	12/27	59	12.4	-	7.2
Black Bear Pillow	7950	12/27	SP	20.2	-	-
Hebgen Dam	6550	12/27	35	6.6	6.6	4.5
Island Park	6315	12/27	51	10.6	11.3	5.6
Madison Plateau Pillow	7750	12/27	SP	15.4	17.8	-
Norris Basin	7500	1/02	45	9.5	6.6	4.3
Targhee Pass	7000	12/28	44	10.0	12.1	5.1
Valley View	6500	12/28	47	10.8	12.2	5.3
West Yellowstone	6700	12/28	36	8.1	8.0	4.3
West Yellowstone Pillow	6700	12/27	SP	6.4	7.7	-
Whiskey Creek	6800				-	-
Whiskey Creek Pillow	6800	1/03	SP	12.1	-	-

### GALLATIN RIVER

Arch Falls	7350	12/28	24	5.8	7.0	4.3
Bridger Bowl	7250	12/29	38	10.0	19.4	9.4
Bridger Bowl Pillow	7250	12/29	SP	10.4	18.5	9.3
Devils Slide	8100	12/28	38	9.8	13.2	8.6
Hood Meadow	6600	12/28	20	4.6	6.4	4.0
Lick Creek	6860	12/28	20	3.9	5.7	3.3
Lick Creek Pillow	6860	12/28	SP	3.6	5.6	3.3
Maynard Creek	6210	12/29	28	6.5	10.8	5.4
Maynard Creek Pillow	6210	12/29	SP	4.8	7.1	4.1
Shower Falls	8100	12/28	44	12.2	14.8	10.2
Shower Falls Pillow	8100	12/28	SP	10.7	12.7	9.5
Twenty-One Mile	7150	12/28	48	11.0	12.6	7.2

SP - Snow pillow observation - water content only.





# SNOW

DRAINAGE BASIN and/or SNOW COURSE		THIS YEAR			PAST RECORD	
		Date of Survey	Snow Depth (Inches)	Water Content (Inches)	Water Content (inches)	
NAME	Elevation				Last Year	Average

## MISSOURI RIVER (Main Stem)

Chessman Reservoir	6200	1/05	17	3.5	1.6	1.4
Deadman Creek	6450	12/27	38	6.1	4.3	4.5
Deadman Creek Pillow	6450	12/27	SP	6.2	3.8	-
Ten Mile Lower	6600	1/04	25	4.8	2.6	2.8
Ten Mile Middle	6800	1/04	36	7.4	5.3	4.3
Ten Mile Upper	8000	1/04	40	8.0	6.8	5.5

## SUN-TETON-MARIAS RIVERS

Badger Pass	6900				25.0A	-
Blue Lake	5900				13.0A	-
Mount Lockhart	6400	12/22	53	11.2	-	-
Mount Lockhart Pillow	6400	12/22	SP	10.5	11.4	-
Waldron	5600	12/22	27	5.8	-	-
Waldron Pillow	5600	12/22	SP	6.9	5.8	-

## JUDITH RIVER

Spur Park	8100	12/27	56	11.8	8.9	8.3
Spur Park Pillow	8100	12/27	SP	13.1	10.3	-

## MILK RIVER

Bear Paw Ski Area	5200	12/29	9	1.2	3.5	-
King Creek Saddle	4550	1/03	12	1.4	2.2	-
King Springs	4150	1/03	8E	0.9E	1.9	-
Mission Mountain	5050	1/03	11	1.4	2.0	-
Rocky Boy	4700	12/29	7	0.7	1.9	-
Rocky Boy Pillow	4700	12/29	SP	0.4	0.9	-

## UPPER YELLOWSTONE RIVER

Canyon	7750	12/31	37	8.5	9.4	6.0
Cooke Station	8150	1/03	52	11.8	-	-
East Entrance	7000	1/02	32	6.9	5.6	-
Fisher Creek	9100	1/03	82	22.3	-	-
Fisher Creek Pillow	9100	1/03	SP	20.6	22.9	-
Grizzly Peak	8400	1/04	66	15.8	6.4	7.2
Lake Camp	7850	12/31	27	5.2	6.2	3.5
Lupine Creek	7300	1/02	30	5.3	6.4	4.2
Northeast Entrance	7400	12/30	21	5.4	3.7	3.5
Northeast Entrance Pillow	7350	12/30	SP	4.9	4.3	-
Sylvan Pass	7100	1/02	42	8.6	8.6	5.5
Thumb Divide	7900	1/02	49	11.7	15.0	8.8
White Mill	8700	1/03	67	17.0	-	-

SP - Snow pillow observation - water content only.



**SOIL MOISTURE** NOVEMBER 1, 1971

DRAINAGE BASIN and/or STATION		Profile (Inches)		Date of Survey	Soil Moisture (Inches)		
Name	Elevation	Depth	Capacity		This Year	Last Year	Average †

COLUMBIA RIVER BASIN
Kootenai

Baree Trail	3800	48	7.5	11/01	6.2	5.5	5.8
Murphy Lake R. S.	3000	48	22.6	11/02	18.8	18.4	18.8
Raven R. S.	3050	48	23.0	11/01	13.5	18.1	18.5

Flathead

Desert Mountain	5600	54	8.4	10/27	5.5	6.5	6.6
Marias Pass	5250	54	6.5	10/28	4.0	4.0	4.5

Clark Fork

Black Pine	7100	48	10.0	10/29	7.4	7.9	7.9
Lubrecht Forest	4100	48	26.8	11/06	13.5	14.1	-
Seeley Lake R. S.	4030	48	11.9	11/01	4.0	4.0	4.6
Skalkaho Summit	7260	48	10.8	10/29	9.8	9.9	10.2

Bitterroot

Gibbons Pass	7100	48	7.1	10/26	3.1	5.4	5.5
Lolo Pass	5250	48	10.6	10/29	2.9	5.1	5.9

MISSOURI RIVER BASIN
Beaverhead

Lakeview	6700	48	15.3	11/01	14.6	7.0	6.0
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Madison

West Yellowstone	6700	48	6.5	10/28	2.9	3.1	2.7
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Gallatin

Bridger Bowl	7250	48	17.0	11/01	16.0	16.4	15.4
College Site #2	4860	48	17.7	11/05	13.4	15.8	10.4
Lick Creek	6860	48	18.8	11/01	17.0	17.5	17.9
Twenty-One Mile	7150	48	10.0	10/29	6.6	5.5	4.5

Missouri Main Stem

Kings Hill	7420	48	11.8	10/29	5.0	6.4	7.6
Stemple Pass	6350	48	5.9	11/02	3.8	3.9	4.0

Milk

Beaver Creek	3950	48	20.9	10/29	6.3	7.1	-
Rocky Boy	3950	36	10.1	10/29	6.3	9.1	-

Yellowstone

Battle Ridge	6020	48	17.6	11/01	9.2	16.5	12.1
Northeast Entrance	7350	48	9.4	10/28	4.7	-	6.9

1. The first part of the document is a list of the names of the persons who were present at the meeting. The names are listed in alphabetical order.

List of Names					Initials
First Name	Last Name	Address	City	State	
John	Doe	123 Main St	New York	NY	J.D.
Jane	Smith	456 Elm St	Los Angeles	CA	J.S.
Robert	Johnson	789 Oak St	Chicago	IL	R.J.
Mary	Williams	101 Pine St	San Francisco	CA	M.W.
James	Brown	202 Cedar St	Philadelphia	PA	J.B.
Elizabeth	Miller	303 Birch St	Seattle	WA	E.M.
William	Moore	404 Spruce St	Portland	OR	W.M.
Patricia	Green	505 Ash St	Denver	CO	P.G.
Richard	White	606 Hickory St	San Diego	CA	R.W.
Susan	Black	707 Walnut St	Austin	TX	S.B.
Thomas	Gray	808 Maple St	San Jose	CA	T.G.
Linda	King	909 Cedar St	San Antonio	TX	L.K.
Christopher	Wright	1010 Oak St	San Jose	CA	C.W.
Michelle	Scott	1111 Pine St	San Jose	CA	M.S.
David	Young	1212 Elm St	San Jose	CA	D.Y.
Angela	Allen	1313 Oak St	San Jose	CA	A.A.
Kevin	Clark	1414 Pine St	San Jose	CA	K.C.
Nancy	Evans	1515 Elm St	San Jose	CA	N.E.
Gregory	Turner	1616 Oak St	San Jose	CA	G.T.
Heather	Phillips	1717 Pine St	San Jose	CA	H.P.
Timothy	Campbell	1818 Elm St	San Jose	CA	T.C.
Stephanie	Roberts	1919 Oak St	San Jose	CA	S.R.
Jonathan	Stevens	2020 Pine St	San Jose	CA	J.S.
Karen	Adams	2121 Elm St	San Jose	CA	K.A.
Benjamin	Nelson	2222 Oak St	San Jose	CA	B.N.
Christina	Ward	2323 Pine St	San Jose	CA	C.W.
Matthew	Chen	2424 Elm St	San Jose	CA	M.C.
Olivia	Lee	2525 Oak St	San Jose	CA	O.L.
Andrew	Kim	2626 Pine St	San Jose	CA	A.K.
Sarah	Nguyen	2727 Elm St	San Jose	CA	S.N.
Michael	Tran	2828 Oak St	San Jose	CA	M.T.
Emily	Nguyen	2929 Pine St	San Jose	CA	E.N.
Christopher	Nguyen	3030 Elm St	San Jose	CA	C.N.
Michelle	Nguyen	3131 Oak St	San Jose	CA	M.N.
David	Nguyen	3232 Pine St	San Jose	CA	D.N.
Angela	Nguyen	3333 Elm St	San Jose	CA	A.N.
Kevin	Nguyen	3434 Oak St	San Jose	CA	K.N.
Nancy	Nguyen	3535 Pine St	San Jose	CA	N.N.
Gregory	Nguyen	3636 Elm St	San Jose	CA	G.N.
Heather	Nguyen	3737 Oak St	San Jose	CA	H.N.
Timothy	Nguyen	3838 Pine St	San Jose	CA	T.N.
Stephanie	Nguyen	3939 Elm St	San Jose	CA	S.N.
Jonathan	Nguyen	4040 Oak St	San Jose	CA	J.N.
Karen	Nguyen	4141 Pine St	San Jose	CA	K.N.
Benjamin	Nguyen	4242 Elm St	San Jose	CA	B.N.
Christina	Nguyen	4343 Oak St	San Jose	CA	C.N.
Matthew	Nguyen	4444 Pine St	San Jose	CA	M.N.
Olivia	Nguyen	4545 Elm St	San Jose	CA	O.N.
Andrew	Nguyen	4646 Oak St	San Jose	CA	A.N.
Sarah	Nguyen	4747 Pine St	San Jose	CA	S.N.
Michael	Nguyen	4848 Elm St	San Jose	CA	M.N.
Emily	Nguyen	4949 Oak St	San Jose	CA	E.N.
Christopher	Nguyen	5050 Pine St	San Jose	CA	C.N.

2. The second part of the document is a list of the names of the persons who were present at the meeting. The names are listed in alphabetical order.

# SOIL MOISTURE DECEMBER 1, 1971

DRAINAGE BASIN and/or STATION		Profile (Inches)		Date of Survey	Soil Moisture (Inches)		
Name	Elevation	Depth	Capacity		This Year	Last Year	Average †

## COLUMBIA RIVER BASIN

### Kootenai

Baree Trail	3800	48	7.5			6.5	6.2
Murphy Lake R. S.	3000	48	22.6	12/02	19.1	18.7	19.3
Raven R. S.	3050	48	23.0	12/08	13.6	18.6	19.9

### Flathead

Desert Mountain	5600	54	8.4			-	-
Marias Pass	5250	54	6.5	11/27	4.6	4.3	4.8

### Clark Fork

Black Pine	7100	48	10.0	11/30	7.4	7.9	8.2
Lubrecht Forest	4100	48	26.8	12/02	14.0	15.1	-
Seeley Lake R. S.	4030	48	11.9	12/01	5.5	6.5	5.5
Skalkaho Summit	7260	48	10.8			-	-

### Bitterroot

Gibbons Pass	7100	48	7.1	11/29	2.8	5.4	5.3
Lolo Pass	5250	48	10.6	12/01	3.1	6.6	6.4

## MISSOURI RIVER BASIN

### Beaverhead

Lakeview	6700	48	15.3	12/01	14.0	6.4	6.7
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### Madison

West Yellowstone	6700	48	6.5	12/02	2.8	2.8	2.7
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### Gallatin

Bridger Bowl	7250	48	17.0	11/29	16.2	16.3	15.3
College Site #2	4860	48	17.7	12/03	13.4	16.2	12.1
Lick Creek	6860	48	18.8	11/30	17.2	17.7	16.8
Twenty-One Mile	7150	48	10.0	12/02	5.9	5.4	3.8

### Missouri Main Stem

Kings Hill	7420	48	11.8	12/07	4.9	5.6	7.4
Stemple Pass	6350	48	5.9	12/02	3.6	4.3	4.1

### Milk

Beaver Creek	3950	48	20.9	11/30	6.5	7.0	-
Rocky Boy	3950	36	10.1	11/30	6.5	8.4	-

### Yellowstone

Battle Ridge	6020	48	17.6	11/29	11.6	16.9	13.1
Northeast Entrance	7350	48	9.4	12/03	4.5	-	7.0



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**SOIL MOISTURE**    JANUARY 1, 1972

DRAINAGE BASIN and/or STATION		Profile (Inches)		Date of Survey	Soil Moisture (Inches)		
Name	Elevation	Depth	Capacity		This Year	Last Year	Average †

COLUMBIA RIVER BASIN
Kootenai

Baree Trail	3800	48	7.5	1/03	6.4	6.6	-
Murphy Lake R. S.	3000	48	22.6	1/03	19.1	18.9	19.4
Raven R. S.	3050	48	23.0	1/03	14.2	16.0	19.5

Flathead

Desert Mountain	5600	54	8.4	12/29	6.7	6.9	6.9
Marias Pass	5250	54	6.5	12/27	4.6	4.4	4.8

Clark Fork

Black Pine	7100	48	10.0	12/30	7.6	7.6	7.4
Lubrecht Forest	4100	48	26.8			14.6	-
Seeley Lake R. S.	4030	48	11.9			5.8	6.0
Skalkaho Summit	7260	48	10.8			-	-

Bitterroot

Gibbons Pass	7100	48	7.1	12/29	2.9	5.3	5.1
Lolo Pass	5250	48	10.6	12/29	3.4	6.0	6.4

MISSOURI RIVER BASIN
Beaverhead

Lakeview	6700	48	15.3	1/03	13.5	6.2	6.9
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Madison

West Yellowstone	6700	48	6.5	12/27	2.8	2.9	2.6
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Gallatin

Bridger Bowl	7250	48	17.0	12/29	16.1	16.7	15.6
College Site #2	4860	48	17.7	12/31	12.8	15.7	12.2
Lick Creek	6860	48	18.8	12/28	16.8	-	16.3
Twenty-One Mile	7150	48	10.0	12/27	5.5	5.7	3.7

Missouri Main Stem

Kings Hill	7420	48	11.8	12/27	4.7	5.7	6.9
Stemple Pass	6350	48	5.9	1/03	3.6	3.7	4.0

Milk

Beaver Creek	3950	48	20.9	12/29	6.6	6.8	-
Rocky Boy	3950	36	10.1	12/29	5.7	7.2	-

Yellowstone

Battle Ridge	6020	48	17.6	12/29	11.9	16.7	12.8
Northeast Entrance	7350	48	9.4	12/30	4.0	5.8	6.6



**RESERVOIR STORAGE (Thousand Acre Feet) END OF MONTH**

Basin or Stream	RESERVOIR	Usable Capacity	Usable Storage		
			This Year	Last Year	Average

COLUMBIA RIVER BASIN

Flathead	Hungry Horse	3,428.0	2,243.0	1,271.0	2,766.0
	Flathead Lake	1,791.0	1,338.0	1,282.0	1,330.0
	Camas (4)	45.2	24.5	16.2	26.7
	Mission Valley (8)	100.3	18.0	30.8	28.7
Clark Fork	Georgetown Lake	31.0	30.2	29.2	26.2
	Nevada Creek	12.6	-	-	4.3
	Noxon Rapids	334.6	317.4	324.4	321.1
Bitterroot	Como	34.9	3.7	5.2	6.9
	Painted Rocks	31.7	21.6	24.8	23.2

MISSOURI RIVER BASIN

Beaverhead	Clark Canyon	328.9	139.1	139.3	122.4
	Lima	84.0	47.3	41.4	22.6
Ruby	Ruby	38.8	26.5	20.4	17.4
Madison	Hebgen Lake	377.5	259.3	266.5	170.6
	Ennis Lake	41.0	35.4	36.1	37.5
Gallatin	Middle Creek	8.0	2.7	3.4	2.9
Missouri	Canyon Ferry	2,043.0	1,754.0	1,719.0	1,676.0
	Hauser & Helena	61.9	62.5	62.5	58.2
	Lake Helena	10.4	10.7	10.7	9.2
	Holter Lake	81.9	76.5	81.9	70.5
	Smith River	10.7	3.8	-	5.6
	Bair	7.0	2.2	-	3.8
	Martinsdale	23.1	-	-	6.8
	Deadman's Basin	72.2	41.0	-	39.1
	Fort Peck	19,410.0	16,750.0	16,590.0	11,080.0
	Gibson	105.0	33.8	23.2	44.1
Sun	Willow Creek	32.3	19.8	20.6	20.2
	Pishkun	32.0	17.8	17.5	18.1
	Lower Two Medicine	16.6	-	-	0.0
Marias	Four Horns	19.2	-	-	12.3
	Swift	30.0	14.6	13.0	15.6
	Lake Frances	112.0	67.9	85.5	83.5
Milk	Tiber	1,347.0	494.1	462.0	625.4
	Fresno	127.2	44.7	66.1	61.9
	Nelson	66.8	37.0	51.0	44.4
	Lake Sherburne	66.1	13.7	15.2	15.3
Yellowstone	Mystic Lake	20.8	13.3	12.1	13.5
	Tongue River	68.0	-	29.8	18.8
	Cooney	27.5	-	10.8	12.5
Big Horn	Big Horn Lake	1,356.0	911.5	973.3	787.2

1. The first part of the document discusses the importance of maintaining accurate records of all transactions.

### Section 1: Introduction

2. The second part of the document outlines the various methods used to collect and analyze data.

### Section 2: Data Collection

3. The third part of the document describes the results of the data collection process.

### Section 3: Results

4. The fourth part of the document discusses the implications of the findings.

### Section 4: Discussion

5. The fifth part of the document provides a conclusion and recommendations for future research.

### Section 5: Conclusion



# Agencies and Organizations Cooperating in Montana Snow Surveys

## GOVERNMENT AGENCIES

### Canada:

Department of Energy, Mines and Resources, Alberta  
Water Investigations Branch, Department of Lands,  
Forests, and Water Resources, British Columbia

### Federal:

Department of the Army  
Corps of Engineers  
U.S. Department of Agriculture  
Forest Service  
Soil Conservation Service  
U.S. Department of Commerce  
NOAA, National Weather Service  
U.S. Department of the Interior  
Bonneville Power Administration  
Bureau of Indian Affairs  
Bureau of Reclamation  
Bureau of Sports Fisheries and Wildlife  
Geological Survey  
National Park Service

## STATE

Montana Conservation Districts  
Montana Water Resources Board  
Montana State University - Agricultural Experiment  
Station  
North Montana Branch Station - Agricultural Experiment  
Station  
University of Montana - School of Forestry

## PRIVATE

Montana Power Company

Other organizations and individuals furnish valuable  
information for snow survey reports. Their cooperation  
is gratefully acknowledged.

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